CLAIMS

Claim 1

An information-processing device for communication source that

5   performs tunnel communication with a device for communication

destination, comprising:

a tunnel communication part for performing the tunnel

communication with communication target data encapsulated;

an identifier acceptor for accepting a communication

10   destination device identifier for identifying a device at the

communication destination;

an identifier storage part storing a communication source device

identifier for identifying the information-processing device; and

an address determination part for determining an address used

15   for the communication target data, according to the communication

destination device identifier and the communication source device

identifier.

Claim 2

20   An information-processing device as claimed in claim 1, wherein the

address determination part determines an address used for the

communication target data, by selecting from a plurality of

predetermined addresses.

25   Claim 3

An information-processing device as claimed in claim 2, wherein the

address determination part compares the communication destination

device identifier with the communication source device identifier, and selects an address used for the communication target data according to the comparison result.

5 Claim 4

An information-processing device for communication source that performs tunnel communication with a device for communication destination, comprising:

a tunnel communication part for performing the tunnel
10 communication with communication target data encapsulated;

a judgement part for judging whether the information-processing device is a caller or a callee in the tunnel communication; and

an address determination part for determining an address used
15 for the communication target data, according to a determination by the judgement part.

Claim 5

An information-processing device as claimed in claim 4, wherein the
20 address determination part determines an address used for the communication target data by selecting from a plurality of predetermined addresses.

Claim 6

25 An information-processing device for communication source that performs tunnel communication with a device for communication destination, comprising:

a tunnel communication part for performing the tunnel communication with communication target data encapsulated;

an identifier acceptor for accepting an communication destination device identifier for identifying a device at the

5 communication destination;

an identifier storage part storing a communication source device identifier for identifying the information-processing device;

a tunnel communication identifier acceptor for accepting a tunnel communication identifier for identifying the tunnel

10 communication; and

an address determination part for determining an address used for the communication target data, according to the communication destination device identifier, the communication source device identifier and the tunnel communication identifier.

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Claim 7

An information-processing device as claimed in claim 6, wherein the address determination part determines a part of an address used for the communication target data according to the communication

20 destination device identifier and the communication source device identifier, and determines an other part an address used for the communication target data according to the tunnel communication identifier.

25 Claim 8

An information-processing device for communication source that performs tunnel communication with a device for communication

destination, comprising:

a tunnel communication part for performing the tunnel communication with communication target data encapsulated;

a judgement part for judging whether the

5 information-processing device is a caller or a callee in the tunnel communication;

a tunnel communication identifier acceptor for accepting a tunnel communication identifier for identifying the tunnel communication; and

10 an address determination part for determining an address used for the communication target data, according to a determination by the judgement part and to the tunnel communication identifier.

Claim 9

15 An information-processing device as claimed in claim 8, wherein the address determination part determines a part of an address used for the communication target data according to the tunnel communication identifier, and determines an other part of an address used for the communication target data according to a determination by the

20 judgement part.

claim 10

An information-processing device as claimed in any one from claims 6 through 9, wherein the address determination part determines at

25 least a part of an address used for the communication target data, by selecting from a plurality of predetermined addresses.

Claim 11

An information-processing device as claimed in any one from claims 1

through 9, wherein the tunnel communication part performs tunnel

communication with two or more devices for communication

5   destination, further comprising:

a detection part for detecting that two or more addresses used

for the communication target data agree in the two or more tunnel

communications; and

an address changing part for changing an address used for the

10   communication target data if the detection part detects that two or

more addresses agree.

Claim 12

An information-processing device as claimed in any one from claims 1

15   through 9, further comprising:

an address change information receiver for receiving address

change information that is information related to address change; and

an address changing part for changing an address used for the

communication target data, according to the address change

20   information.

Claim 13

An information-processing device as claimed in any one from claims 1

through 9, wherein the tunnel communication part performs tunnel

25   communication with two or more devices for communication

destination, further comprising:

a detection part for detecting that two or more addresses agree

that are used for the communication target data in the two or more

tunnel communications;

an address agreement information transmitter for transmitting

address agreement information showing that addresses agree, if the

5   detection part detects that two or more addresses agree;

an address change information receiver for receiving address

change information that is information related to address change; and

an address changing part for changing an address used for the

communication target data, according to the address change

10   information.

Claim 14

An information-processing device as claimed in any one from claims 1

through 9, further comprising an address output part for outputting an

15   address that the address determination part determined.

Claim 15

An information-processing device as claimed in claim 14, wherein the

address output part transmits an address that the address

20   determination part determined.

Claim 16

A communication system comprising:

an information-processing device as claimed in any one from

25   claims 1 through 9;

a device at the communication destination; and

a server that performs a process for establishing tunnel

communication performed between the information-processing device and a device at the communication destination.

Claim 17

5   A server comprising:

an identifier acceptor for accepting a first device identifier for identifying a first information-processing device and a second device identifier for identifying a second information-processing device;

an address determination part for determining a first address of
10   the first information-processing device and a second address of the second information-processing device, both addresses used for communication target data encapsulated in tunnel communication performed between the first information-processing device and the second information-processing device, according to the first device
15   identifier and the second device identifier that the identifier acceptor accepted; and

an address output part for outputting the first address and the second address that the address determination part determined.

20   Claim 18

A server as claimed in claim 17, wherein the address determination part determines the first address and the second address, by selecting given addresses from predetermined addresses.

25   Claim 19

A server as claimed in claim 18, wherein the address determination part compares the first device identifier with the second device

identifier and selects the address according to the comparison result.

Claim 20

A server comprising:

a judgement part for judging which is a caller or callee, a first information-processing device or a second information-processing device, both performing tunnel communication;

an address determination part for determining a first address of the first information-processing device and a second address of the second information-processing device, both addresses used for communication target data encapsulated in tunnel communication performed between the first information-processing device and the second information-processing device, according to a determination by the judgement part; and

an address output part for outputting the first address and the second address that the address determination part determined.

Claim 21

A server as claimed in claim 20, wherein the address determination part determines the first address and the second address by selecting from a plurality of predetermined addresses.

Claim 22

A server comprising:

an identifier acceptor for accepting a first device identifier for identifying a first information-processing device and a second device identifier for identifying a second information-processing device;

a tunnel communication identifier acceptor for accepting a first device identifier for identifying first information-processing device and a second device identifier for identifying a second information-processing device;

5   an address determination part for determining a first address of the first information-processing device and a second address of the second information-processing device, both addresses used for communication target data encapsulated in tunnel communication performed between the first information-processing device and the

10   second information-processing device, according to the first device identifier and the second device identifier, both identifiers accepted by the identifier acceptor, and to a tunnel communication identifier accepted by the tunnel communication identifier acceptor; and

an address output part for outputting the first address and the

15   second address that the address determination part determined.

Claim 23

A server as claimed in claim 22, wherein the address determination part determines:

20   a part of an address used for the communication target data, according to the first device identifier and the second device identifier; and

an other part of an address used for the communication target data, according to the tunnel communication identifier.

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Claim 24

A server comprising:

a judgement part for judging which is a caller or callee, a first information-processing device or a second information-processing device, both performing tunnel communication;

a tunnel communication identifier acceptor for accepting a

5   tunnel communication identifier for identifying tunnel communication performed between the first information-processing device and the second information-processing device;

an address determination part for determining a first address of the first information-processing device and a second address of the

10   second information-processing device, both addresses used for communication target data encapsulated in tunnel communication performed between the first information-processing device and the second information-processing device, according to a determination by the judgement part and to a tunnel communication identifier accepted

15   by the tunnel communication identifier acceptor; and

an address output part for outputting the first address and the second address that the address determination part determined.

Claim 25

20   A server as claimed in claim 24, wherein the address determination part determines a part of an address used for the communication target data according to the tunnel communication identifier, and determines an other part of an address used for the communication target data according to a determination by the judgement part.

25

Claim 26

A server as claimed in any one of claims 22 through 25, wherein the

address determination part determines at least a part of an address used for the communication target data, by selecting from a plurality of predetermined addresses.

5   Claim 27

A server as claimed in any one of claims 17 through 25, wherein the address output part transmits the first address and the second address to the first information-processing device and the second information-processing device.

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Claim 28

A communication system comprising:

        a server as claimed in any one of claims 17 through 25;

        a first information-processing device that performs tunnel

15   communication using the first address for the communication target data; and

        a second information-processing device that performs tunnel communication with the first information-processing device using the second address for the communication target data.

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Claim 29

A server comprising:

        an address agreement information receiver for receiving address agreement information that is information showing that two or

25   more addresses agree that are used for communication target data encapsulated in two or more tunnel communications;

        an address change information composition part for composing

address change information that is information related to address
change so that the address agreement is resolved; and

an address change information transmitter for transmitting the
address change information.

5

Claim 30

A method of determining an address, comprising a step of determining
an address for determining an address used for communication target
data encapsulated in tunnel communication performed between the

10   first information-processing device and the second
information-processing device, according to a first device identifier for
identifying a first information-processing device and to a second device
identifier for identifying a second information-processing device.

15   Claim 31

A method of determining an address as claimed in claim 30, further
comprising a step of an identifier for accepting the first device
identifier and/or the second device identifier, wherein the step of
determining an address determines the address using the first device

20   identifier and/or the second device identifier, both accepted in the
accepting of an identifier.

Claim 32

A method of determining an address, comprising:

25   a step of judging for judging which is a caller or callee, a first
information-processing device or a second information-processing
device, both performing tunnel communication; and

a step of determining an address for determining an address
used for communication target data encapsulated in tunnel
communication performed between the first information-processing
device and the second information-processing device, according to a
5   determination by the judging step.

Claim 33

A method of determining an address, comprising a step of determining
an address for determining an address used for communication target
10   data encapsulated in tunnel communication performed between the
first information-processing device and the second
information-processing device, according to a first device identifier for
identifying a first information-processing device, to a second device
identifier for identifying a second information-processing device, and
15   to an tunnel communication identifier for identifying tunnel
communication performed between the first information-processing
device and the second information-processing device.

Claim 34

20   A method of determining an address as claimed in claim 33, further
comprising a step of accepting an identifier for accepting the first
device identifier and/or the second device identifier, wherein the step
of determining an address determines the address using the first
device identifier and/or the second device identifier accepted in the
25   step of accepting an identifier.

Claim 35

A method of determining an address as claimed in one of claims 33 and
34, further comprising a step of accepting a tunnel communication
identifier for accepting the tunnel communication identifier, wherein
the step of determining an address determines the address, using the
5   tunnel communication identifier accepted in the step of accepting a
tunnel communication identifier.

Claim 36

A method of determining an address, comprising:

10   a step of judging for judging which is a caller or a callee, first
information-processing device or second information-processing device,
both performing tunnel communication; and

           a step of determining an address for determining an address
used for communication target data encapsulated in tunnel

15   communication performed between the first information-processing
device and the second information-processing device, according to an
determination by the step of judging, and to a tunnel communication
identifier for identifying tunnel communication performed between the
first information-processing device and the second

20   information-processing device.

Claim 37

A method of determining an address as claimed in claim 36, further
comprising a step of accepting a tunnel communication identifier for

25   accepting the tunnel communication identifier, wherein the step of
determining an address determines the address using the tunnel
communication identifier accepted in the step of accepting a tunnel

communication identifier.

Claim 38

A method of changing an address that is used in an

information-processing device for communication source, performing

tunnel communication with two or more devices for communication

destination, comprising:

a step of detecting for detecting that two or more addresses

agree that are used for respective communication target data

encapsulated in the two or more tunnel communications; and

a step of changing an address for changing an address used for

the communication target data when it is detected that two or more

addresses agree in the step of detecting.

Claim 39

A method of changing an address that is used in an

information-processing device for communication source, performing

tunnel communication with a device for communication destination,

comprising:

a step of receiving address change information for receiving

address change information that is related to address change; and

a step of changing an address for changing an address used for

the communication target data according the address change

information.

Claim 40

A method of changing an address that is used in an

information-processing device for communication source, performing

tunnel communication with two or more devices for communication

destination, comprising:

a step of detecting for detecting that two or more addresses

5   agree that are used for respective communication target data

encapsulated in the two or more tunnel communications;

a step of transmitting address agreement information for

transmitting address agreement information showing address

agreement if it is detected in the step of detecting that two or more

10   addresses agree;

a step of receiving address change information for receiving

address change information that is information related to address

change; and

a step of changing an address for changing an address used for

15   the communication target data according to the address change

information.

Claim 41

A method of changing an address, comprising:

20   a step of receiving address agreement information for receiving

address agreement information showing that two or more addresses

agree that are used for communication target data encapsulated in two

or more tunnel communications;

a step of composing address change information for composing

25   address change information that is related to address change so that

the address agreement is resolved; and

a step of transmitting address change information for

transmitting the address change information.

Claim 42

A program for making a computer execute a step of determining an

5   address for determining an address used for communication target

data encapsulated in tunnel communication performed between the

first information-processing device and the second

information-processing device, according to a first device identifier for

identifying a first information-processing device and to a second device

10   identifier for identifying a second information-processing device.

Claim 43

A program as claimed in claim 42, further making a computer execute a

step of accepting an identifier for accepting the first device identifier

15   and/or the second device identifier, wherein the step of determining an

address determines the address, using the first device identifier and/or

the second device identifier accepted in the step of accepting an

identifier.

20   Claim 44

A program for making a computer execute:

a step of judging for judging which is a caller or a callee, first

information-processing device or second information-processing device,

both performing tunnel communication; and

25   a step of determining an address for determining an address

used for communication target data encapsulated in tunnel

communication performed between the first information-processing

device and the second information-processing device, according to a

determination in the step of judging.

Claim 45

5   A program for making a computer execute a step of determining an

address for determining an address used for communication target

data encapsulated in tunnel communication performed between the

first information-processing device and the second

information-processing device, according to a first device identifier for

10   identifying a first information-processing device, to a second device

identifier for identifying a second information-processing device, and

to a tunnel communication identifier for identifying tunnel

communication performed between the first information-processing

device and the second information-processing device.

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Claim 46

A program as claimed in claim 45, further making a computer execute a

step of accepting an identifier for accepting the first device identifier

and/or the second device identifier, wherein the step of determining an

20   address determines the address, using the first device identifier and/or

the second device identifier accepted in thestep of accepting an

identifier.

Claim 47

25   A program as claimed in one of claims 45 and 46, further making a

computer execute a step of accepting a tunnel communication identifier

for accepting the tunnel communication identifier, wherein the step of

determining an address determines the address, using the tunnel
communication identifier accepted in the step of accepting a tunnel
communication identifier.

5   Claim 48

A program for making a computer execute:

      a step of judging for judging which is a caller or a callee, first
information-processing device or second information-processing device,
both performing tunnel communication; and

10   a step of determining an address for determining an address
used for communication target data encapsulated in tunnel
communication performed between the first information-processing
device and the second information-processing device, according to an
determination by the step of judging, and to a tunnel communication

15   identifier for identifying tunnel communication performed between the
first information-processing device and the second
information-processing device.

Claim 49

20   A program as claimed in claim 48, further making a computer execute a
step of accepting a tunnel communication identifier for accepting the
tunnel communication identifier, wherein the step of determining an
address determines the address, using the tunnel communication
identifier accepted in the step of accepting a tunnel communication

25   identifier.

Claim 50

A program for making a computer execute a process in an
information-processing device for communication source performing
tunnel communication with two or more devices for communication
destination, comprising:

5   a step of detecting for detecting that two or more addresses
agree that are used for respective communication target data
encapsulated in the two or more tunnel communications; and

a step of changing an address for changing an address used for
the communication target data if it is detected in the step of detecting
10   that two or more addresses agree.

Claim 51

A program for making a computer execute a process in an
information-processing device for communication source performing
15   tunnel communication with a device for communication destination,
comprising:

a step of receiving address change information for receiving
address change information that is information related to address
change; and

20   a step of changing an address for changing an address used for
the communication target data according to the address change
information.

Claim 52

25   A program for making a computer execute a process in an
information-processing device for communication source performing
tunnel communication with two or more devices for communication

destination, comprising:

a step of detecting for detecting that two or more addresses agree that are used for respective communication target data encapsulated in the two or more tunnel communications;

5   a step of transmitting address agreement information for transmitting address agreement information showing address agreement if it is detected in the step of detecting that two or more addresses agree;

a step of receiving address change information for receiving

10   address change information that is information related to address change; and

a step of changing an address for changing an address used for the communication target data according to the address change information.

15

Claim 53

A program for making a computer execute:

a step of receiving address agreement information for receiving address agreement information showing that two or more addresses

20   agree that are used for communication target data encapsulated in two or more tunnel communications;

a step of composing address change information for composing address change information that is related to address change so that the address agreement is resolved; and

25   a step of transmitting address change information for transmitting the address change information.